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BIOELECTRICITY PRODUCTION FROM AGRICULTURAL RESIDUES: AN ANALYSIS OF THAILAND AND KENYA

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ABSTRACT

Globally, 1.3 billion people in developing countries lack access to electricity while 2.7 billion rely on traditional biomass for basic energy needs. The regions most affected by the lack of modern energy access are South Saharan Africa and developing Asia. This paper provides a comparative assessment of bio-electricity from environmentally benign agricultural residues in Thailand and Kenya in terms of feedstock and sustainability issues. Bio-electricity development could lead to decrease in national energy import, rural income generation and reduction in greenhouse gas (GHG) emissions. Bio-electricity from residues does not compete with food production but rather provides an integrated system for addressing both food and energy concerns. Applying an environmentally benign extraction rate, this study estimates that sustainably-derived residues amount to 10.4 million bone dry tonnes (BDT) and 1.2 million BDT per year for Thailand and Kenya, respectively. The feedstock in Thailand has the potential of generating between 6.7 – 17.8 TWh bio-electricity to displace between 4% – 11 % of electricity consumption. Whiles, bio-electricity generation from residues in Kenya ranges from 2.0 – 5.4 TWh, which is sufficient to offset 32% - 85% of the country's electricity consumption. The study proffers policy recommendations for bio-electrification from agricultural residues for the two countries.

Keywords: bioenergy, residues, policies